

DOCUMENT RESUME

ED 057 485

EA 003 897

AUTHOR Brunetti, Frank A.
TITLE Open Space: A Status Report.
INSTITUTION Stanford Univ., Calif. School Planning Lab.
REPORT NO Memo-1
PUB DATE Aug 71
NOTE 22p.

EDRS PRICE MF-\$0.65 HC-\$3.29
DESCRIPTORS Academic Performance; Acoustical Environment;
Flexible Classrooms; *Information Dissemination;
National Surveys; *Open Plan Schools; Research
Projects; *School Design; School Organization; School
Superintendents; Space Utilization; *Student
Attitudes; Student Grouping; *Teacher Attitudes
IDENTIFIERS School Environment Study

ABSTRACT

This memorandum is the first report on the activities of the School Environment Study, a research, development, and dissemination program focused on open-space schools. The program has as its goals to (1) gather and coordinate basic data about the characteristics of open-space schools; (2) study the effects of varying space arrangements on student and teacher performance, perceptions, and attitudes; (3) develop methods and instruments to be used in conducting assessments of the school environment; and (4) develop guidelines and strategies to help promote effective space utilization. This document, designed to shed additional light on some common questions, reports on recent trends in open space development and presents data on the effects of open space on the attitudes and behavior of students and teachers. A related document is EA 003 896. (Author/MLF)

ED0057485

Memorandum No. 1

OPEN SPACE: A STATUS REPORT

Frank A. Brunetti
Director, School Environment Study

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
OFFICE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRO-
DUCED EXACTLY AS RECEIVED FROM
THE PERSON OR ORGANIZATION ORIG-
INATING IT. POINTS OF VIEW OR OPIN-
IONS STATED DO NOT NECESSARILY
REPRESENT OFFICIAL OFFICE OF EDU-
CATION POSITION OR POLICY.

School Environment Study
School Planning Laboratory
School of Education
Stanford University

August 1971

EA 003 897

A publication of the School Environment Study,
a project supported by funds from Educational
Facilities Laboratories, Inc.

TABLE OF CONTENTS

Introduction	ii
Trends	2
Why?	3
Evolution of Space	5
Effects of Open Space	8
Student Performance	9
Noise, Distraction and Privacy	11
Observation	16
School Organization	18

INTRODUCTION

The School Environment Study is a research, development, and dissemination program focused on open-space schools and has four main goals: to gather and coordinate basic data about the characteristics of open-space school; to study the effects of varying space arrangements on student and teacher performance, perceptions, and attitudes; to develop methods and instruments to be used in conducting assessments of the school environment; and to develop guidelines and strategies to help promote effective space utilization. In addition to formally published bulletins and research reports, informal papers and reports are published as Memorandums from the School Environment Study. The Memorandum series is designed to increase our knowledge about the basic nature and characteristics of open-space schools.

Memorandum No. 1 is an up-dated report on recent trends in open space development and presents data on the effects of open space upon the attitudes and behavior of students and teachers. The report is not complete or conclusive, but is designed to shed additional light on some common questions.

OPEN SPACE: A STATUS REPORT

Frank A. Brunetti
Director, School Environment Study

The open-space school represents a significant departure from the traditional school building that we have known the last hundred years. Rather than a series of classrooms of equal size arranged along corridors or vertically in various levels, the open space school is composed of larger areas lacking interior partitions in which the visual and acoustical separation between teaching stations and classroom areas is limited or eliminated.

To a large degree open-space schools have been stereotyped as "larger self-contained boxes." A common picture brought to mind by the term "open space" is a large loft area, unbroken by interior walls, occupied by several class groups and their teachers. Actually open-space schools vary widely in design characteristics. While the most predictable feature of the conventional school building has been its rows of standard size classrooms, the most predictable feature of the open-space school is its unpredictable spatial organization. Instructional areas ranging in size from 2 to over 30 equivalent classrooms arranged in various configurations have come to be called "open space." While space becomes increasingly open as square footage increases and the use of partitions decreases, open space buildings range from those that make extensive use of flexible partition systems and are commonly referred to as "modified" open space to those that do not have any floor-to-ceiling partitions and are truly "open."

The wide variation in specific design configurations and varying practices in the use of demountable and operable partitions has made it difficult to pinpoint exactly when or where the first open-space school was constructed. For example, operable partitions have been used to separate classrooms in conventional designs for over 10 years. However, buildings having several classrooms combined to form one open instructional area can be traced back 8 to 9 years.

TRENDS

It is generally recognized that California set the early pace in open-space development on a large scale, but within the last four years the majority of new schools around the country have been of open design. As part of the open-space research program at Stanford a survey was conducted in 1970 to determine what national trends had been established in recent years.¹ Of over 2,500 new schools constructed in 1967, '68 and '69 in 43 states, over 50% had open type designs. Trends in specific states varied from California where only 16% of the schools were "conventional" to New York where the trend was reversed with only 19% open schools. Other states reporting a high degree of open-space development include Florida, Texas, Washington and Wisconsin. It is noted that the schools in the open category had originally been classified as those with true "open" plans and those with open space "modified" by flexible partition systems; as compared to 25% of the elementary schools, only 14% of the high schools had open plan areas as the use of operable and demountable partitions in open space is much more common in secondary schools.

An analysis of the schools in the Architecture Exhibit at the 1971 AASA convention revealed similar results. Although percentage distributions for elementary, middle and high schools were somewhat different from the national survey, the trend toward open space was dominant in the exhibit. The influence of open planning was strongest at the elementary level as only 9% of the elementary schools were of conventional design as compared to 61% of the high schools.

The results of both surveys are summarized in Table I.

¹Open-Space Schools Project Bulletin, Number 1, March 1970, School Planning Laboratory, Stanford University.

Table 1

OPEN-SPACE TRENDS

National Survey 1970 (three-year period 1967-69)

	<u>Open</u>	<u>Conventional</u>
Elementary	54%	46%
Middle	52%	48%
Senior high	52%	48%

AASA Convention - School Architecture Exhibit 1971

	<u>Open</u>	<u>Conventional</u>
Elementary	91%	9%
Middle	66%	34%
Senior high	39%	61%

WHY?

As we have seen above, a trend toward open space development has been firmly established the last few years. However, the reasons as to why open space has replaced the classroom are less clearly defined. Attempts to rearrange the interior space of the school building into other than standard size classrooms have come about during a period in which theory and practice in both education and architecture have changed.

Most open space schools have been planned on the basis of new requirements brought about by new curriculum materials and equipment, new student and staffing organization, and new time allotments for instruction and planning. Thirty superintendents who have pioneered open space in various school districts throughout the country identified the four major reasons as to why they build their schools as follows:

1. To better meet student needs through individualization of instruction.

2. To better use teacher talents and time through cooperative staff organization.
3. To allow for changes in organization and use of space over time.
4. To provide for an environment of change through experimentation and innovation.

While these reasons are general in nature and perhaps do not include other common influences, they do involve three factors that form the basic framework of most open-space schools - change, people, and behavior. If these factors are combined, they focus directly on changing roles - the role of the student and the role of the teacher.

The process of translating such terms as "individualization" and "cooperative staffing" into concrete program elements of people, time, materials and methods has generated a high degree of variability in specific programs. The most common emphasis has been placed on developing programs that take into account individual rates of progress and organize learning experiences around individual and small groups of students rather than class groups of 25-30 pupils. Most school staffs are organized into formal work teams of two or more teachers who cooperatively plan and coordinate instructional activities.

Not all open-space schools have resulted from planning based upon well-developed philosophy, values, attitudes and goals, however. Some school superintendents have adopted open space in an effort to reduce the rising costs of school construction. Others have jumped on the open space bandwagon because of trends in neighboring school districts and often produce carbon copies of "exemplary" schools.

In some communities open-space schools have been met with adverse reaction from parents who associate nontraditional architecture with controversial influences such as "progressive" or "informal" education. Still in other communities school staffs have moved into new buildings with little thought as to why they were there or how they were to use the space. This problem is best expressed by one principal who remarked, "We had little planning time, some liberal philosophy, and confused direction."

Anti-open space feelings often result among parents in these situations. In most cases, the problem of adverse reaction to open space has been countered by including parents, teachers, and administrators in comprehensive planning program that carries on well after the school is occupied.

EVOLUTION OF SPACE

Has the wide variation in specific design configurations and programs occurred in a random fashion or has open space development followed an evolutionary pattern? This question is being asked with increasing frequency by educators and designers who are faced with the perplexing problems of having to determine what size and arrangement of spaces will best serve their needs. As we have seen above, many factors have influenced open space - not all of an educational nature. The problem is further compounded by the fact that the majority of open-space schools have been constructed within the last four years. However, by studying school districts that have had experience with several open-space schools and by isolating specific schools at various time intervals throughout the last 8-10 year period, a developmental trend can be identified. Basically space has been affected most by changing characteristics of three functional requirements that are found in most open space programs:

- * the need for variable size groups.
- * the need for variable instructional methods and materials, and
- * the need for variable staffing patterns.

Initially open space was a simple modification of the self-contained classroom; most commonly from three to six classrooms were grouped into open "pods" or "big rooms" to accommodate an equivalent number of class groups and teachers. For example, two of the first open space instructional areas were four classroom pods included in conventional buildings at the Lewis Sands Primary School in Chagrin Falls, Ohio (1961) and the Dilworth Elementary School in Cupertino, California (1962). Although these two big rooms were entirely open, many of the first open-space schools were

essentially of conventional design but replaced permanent walls with folding partitions. It is noted that the size of most pod-type open space has been based upon the number of teachers that would work together on a team usually within grade level.

A modification of the basic multi-classroom pod has been the inclusion of "commons" areas, "activities centers" and "resource centers." Those areas add square footage to the classroom cluster and have been used in various ways - as satellite libraries that bring resources closer to instruction, as extended learning areas that accommodate diverse activities and as buffer zones to separate class groups.

Clearly, the majority of open-space schools fall into the pod-type category. An analysis of 150 floor plans collected from throughout the country in 1970 revealed that 75% were composed of several pods of the same size and an additional 10% were also composed of pods, but of variable size.¹ Although considered by many to be "first generation" open space, the influence of the first big rooms is apparent in many new schools. The majority of open-space schools in the ASSA exhibit consisted of enclosed classroom clusters designed to accommodate specific staffing arrangements.

A significant number of new schools in the last two or three years depart from the first generation schools and are composed of larger areas of undifferentiated space that can accommodate the entire student body and teaching staff. School administrators involved in planning those schools indicate that efforts to continually improve individualized programs create new staffing, grouping and instructional requirements that do not conform easily to enclosed pods of predetermined sizes. Teachers and administrators who have had experience with both the pod schools and loft schools indicate that the larger open spaces provide a wider range of alternatives for creating a variety of spatial arrangements. The most common limitation of the pod-type school is restriction of the size and structure of teaching teams and overloading some pods due to a change in grouping plans or enrollment.

¹ Ibid

A growing number of schools are replacing certificated teachers with trained paraprofessionals in an effort to more effectively utilize the total staff. Some paraprofessionals (aides) perform instructional tasks that do not require a certificated teacher while others perform various clerical and logistical tasks. The overall effect is to maximize the efforts of the professional teacher and to increase adult-student contact. Thus, while the teacher-student ratio may be increased from 25:1 to 40:1, the overall adult-student ration is often reduced to as low as 10:1 or 15:1.

The wider range of activities and staffing patterns created by individualized programs has not only necessitated larger open areas that do not conform to specific classroom equivalencies, but there is a greater need for closed space. Some activities are clearly incompatible with those that have common characteristics (reading, writing, and other more "conventional" activities) and are too varied to be effectively scheduled in advance. Operable partitions have typically been used to separate a classroom size space within an open area for this purpose, but problems typically result from "territorial" rights and individuzlied activities rarely conform to a conventional classroom organization or area. Thus common use closed spaces adjacent to the main open instructional area are becoming common. For example, Kendrick Lake s Elementary School, the 17th open-space elementary school in the Jefferson County (Denver, Colorado) School District has two 1,600 sq. ft. "closed flexible laboratoires" in addition to an open instructional/resource space serving over 700 students. Through the use of demountable partitions, the laboratory areas can be arranged in a variety of configurations. Early reports from the staff indicate these areas work well, but there is a need for additional seminar-type spaces - perhaps two for every three teachers.

The evolution of open sapce from the modified classroom pod to a combination of large open areas and closed flexible spaces, without a conventional classroom orientation, has pointed to a need for replacing the equivalent classroom as the main unit of floor area in planning schools. Not only is the 700-900 sq. ft. conventionally allotted a typical classroom proving to be inadequate for a highly individualized, active program

but the actual process of design must be free to respond to the nature and extent to which various activities take place and not have to conform to arbitrary spatial standards.

EFFECTS OF OPEN SPACE

In the final analysis the true merits of open space can only be judged by its effects upon students and teachers. A wide range of opinions and observations have been made as to its effectiveness with few based upon sound evaluation and valid data. Some advocates claim that open space automatically produces high achievement and better teaching, while those in opposition argue that open space has created unneeded chaos and confusion. Whatever the argument - positive, negative or neutral - the question asked most often is what effect does open space have upon producing higher achievement as compared to the self-contained classroom. A related question asks to what degree is teacher performance improved in open space.

The School Planning Laboratory, under grants from Educational Facilities Laboratories, has been in the process of conducting a long range research and development program - the School Environment Study - to determine the overall significance of alternative spatial environments for students and teachers. This project has recently affiliated with a program in the Stanford Center for Research and Development in Teaching - the Environment for Teaching Programs - which has focused on studying the effects of various cooperative staffing arrangements in open space. We have found that the problem of determining the effects of various spatial configurations on human organization, behavior and attitudes is a highly complex and time-consuming task. Before the questions related to student and teacher performance can be answered, there are many intervening factors that must be considered. It is unlikely that the school building itself has any direct measurable effect on whether children learn to read better or teachers are more inspiring; rather, it will permit or restrict

certain functions that may or may not be related to performance measures. If functions related to performance have not changed - if there is no change in staff organization and relations, no change in program planning and coordination, no change in curriculum, no change in student-teacher relations, no change in instructional strategies - the residual effect of space upon student and teacher performance will very likely be small. We are, however, encouraged by the evidence we have gathered to date, some of which is presented below.

Student Performance

There have been no consistent differences in academic achievement in open-space and conventional schools as measured by standardized achievement tests. There are examples of reading or math scores to show higher learning rates in either open or conventional schools in the same school district, but there has been no control for such general factors as socio-economic status or I.Q., let alone those variables that would isolate space as a strong determinant.

Most educators feel that standardized achievement tests are too narrow in scope to measure many of the alternative learning goals of the open-space school. As long as academic achievement is not adversely affected, the improvement of such factors as motivation, self-direction, self-concept, self-responsibility, inquiry skills, and peer relations are seen to be equally important in rounding out a student's achievement "profile." Improvement in these areas, which often necessitates the development of completely new learning skills, will very likely result in long-term improvement in academic achievement. While measurement is not an easy task there is data to show that some of the alternative achievement goals listed above are being met in some open-space schools. For example, elementary students in a Canadian open-space school indicated that as compared to conventional schools they had attended, they were able to exercise a greater degree of self-direction, work with their peers to a greater extent, and were bored less because there were

More activities, different groups, and teachers with which to work. Similar responses were obtained from junior high school students in open space.

While these differences may be expected when we compare students in an innovative program in open space with students in a conventional program, in conventional classrooms, will these differences remain if the students are engaged in the same kind of program - either innovative or conventional? We found that high school science students using the same independent study materials in an open science facility and in conventional science classrooms reported being able to exercise a high degree of self-direction and independence in carrying out their activities. However, a larger percent of students in the open-space facility reported high self-direction and independence. A larger percent of students in both schools using independent study materials were higher in these areas than students in another conventional school with a conventional science program. These results are presented in Table 2.

Table 2

HIGH SCHOOL STUDENTS REPORTING HIGH
SELF-DIRECTION AND INDEPENDENCE

	Independent Study in <u>Open Space</u> (N=445)	Independent Study in Con- <u>ventional Classroom</u> (N=332)	Conventional Programs in Con- <u>ventional Classrooms</u> (N=329)
Self-direction	68%	58%	47%
Independence	74%	64%	54%

In an effort to determine if teachers in open space foster a desire for greater self-direction, elementary students in a school with self-contained classrooms and in an open-space school were asked to indicate what characteristics an ideal teacher should possess.¹ Although students

¹R. E. Meyers, "A Comparison of the Perceptions of Elementary School Children in Open Area and Self-Contained Classrooms in British Columbia," Journal of Research and Development in Education, Spring 1971.

in both schools agreed to a great extent as to what an ideal teacher should be, the students in open space did not want a teacher who directed and controlled their activities in a conventional manner. Along with a desire for more autonomy, children in open space also expressed a need for certain kinds of control that would enable them to more effectively carry out learning activities on their own.

To obtain another measure of student performance other than students' perceptions, we asked each teacher in two elementary schools - a new open-space building and an older conventional building - to rate a random sample of their students on nine learning traits - five academic traits and four social emotional traits. The schools were located in the same school district, served similar student populations, and used the same general curriculum materials. The rating instrument was administered twice - once in February (when the open school opened) and again in June. As compared to the conventional school, children in the open-space school were rated lower in February, but were higher in June. Growth was significantly greater in the social emotional traits - peer relations, adult relations, independence, and emotional maturity. A replication of the study conducted this past year revealed significant growth in seven of the nine learning traits among children in the open-space school as compared to only two traits in the conventional school.

Noise, Distraction and Privacy

Studies of the effects of noise on student and teacher performance are inconclusive at this point; individual perception is a strong determinant factor that is difficult to measure. While it is commonly understood that noise can become a problem in any school, it is felt by many to be more of a problem in open space. We have data to indicate that the type of activity is far more important than space. For example, in the three high schools described above, we found that students in the independent study programs in open space and conventional classrooms were distracted to a much higher degree than students in conventional classrooms with a conventional program during non-laboratory activities. However,

distraction was low in all three schools during laboratory work.

Further analysis of the specific factors causing high distraction during non-laboratory activities revealed that the general noise level was a strong factor in the two independent study programs, but minor in the conventional program/conventional classroom school. This was expected

Table 3

HIGH SCHOOL SCIENCE STUDENTS REPORTING HIGH DISTRACTION

<u>Two Types of Activities</u>	<u>Independent Study in Open Space (N=445)</u>	<u>Independent Study in Conven- tional Classroom (N=332)</u>	<u>Conventional Programs in Conven- tional Classrooms (N=329)</u>
Distraction during study/ non-laboratory activities	62%	76%	34%
Distraction during laboratory activities	33%	39%	28%
<u>Specific Factors Causing Distraction During Non- Laboratory Activities</u>			
General Noise	22%	23%	7%
Presence of other students	15%	16%	10%
Student movement	10%	12%	5%
Student Conversation - Science	9%	10%	12%
Student Conversation - Social	29%	39%	24%

because of the active nature of the independent study programs as compared to the teacher controlled activity in the conventional program. This same relationship existed for two other factors that were also affected by the nature of the program - distraction caused by the presence of other students (density) and distraction by student movement. However, distraction from the conversation of other students - both social and science-oriented

- was not dependent upon the program and affected students about the same in all three schools. Social conversation was the factor creating the most distraction of all studied, with the largest percentage of students distracted in the conventional school with independent study. The results are summarized in Table 3.

A study of three elementary schools yielded results that were similar to our high school study, but provided additional insights into the effects of space upon noise and the relationship between noise and distractions. The percent of students in each school reporting noise as a problem and high distraction is presented in Table 4.

It appears that noise in the self-contained elementary classroom, where a wide variety of activities in several subject areas takes place, maybe more of a problem than in the high school classroom, where activities are typically less diverse, limited to single subjects, and strictly regulated by time schedules. For example, only 19% of the students in an open-space school indicated noise was a problem as compared to 56% of the students in a conventional school in the same district; both schools were using the same curriculum materials and teaching methods which could be called "conventional" or non-individualized in nature. Two factors seem to have contributed to these differences. First, the carpeted floors in the open building reduced noise levels considerably as compared to the

Table 4
NOISE AND DISTRACTION AMONG
ELEMENTARY STUDENTS

	Individualized Program in <u>Open Space</u> (N=83)	Conventional Program in <u>Open Space</u> (N=67)	Conventional Pro- gram in Conven- <u>tional Classrooms</u> (N=74)
Class is too noisy most of the time	54%	19%	56%
Distracted most of the time	27%	9%	31%

tile floors in the conventional school. Second, "commons" areas in the open-space school provided teachers with additional space to geographically separate possible noise generating activities while most activities in the conventional school were confined to each 900 sq. ft. classroom. A highly individualized, activity-oriented program in another open-space school, however, provided results similar to the conventional school and to our high school study - 54% of the students felt noise was a problem. Thus, the nature of the educational program was again apparent. It is noted that both teachers and students in all three schools reported that teachers were bothered by noise to a much greater degree than students were.

The elementary study also revealed that a high degree of noise does not automatically result in distraction among students. Approximately one-half as many students reported being distracted most of the time as compared to those reporting class was too noisy most of the time. Only 9% of the students in the open-space school with the conventional program reported being distracted as compared to 27% in the individualized open-space school and 31% in the conventional school. It is also noted that some students reported noise was a problem, but were not distracted while others reported being distracted, but did not feel it was too noisy. Several factors were seen to cause distraction; social conversation of other students was most common with student movement and general noise causing far less distraction.

The open-space school has often been criticized because it affords = students with little privacy. The data from our high school and elementary studies cited above do not support this argument. Approximately 45% of the students in all three high school science programs indicated they did not have adequate acoustical privacy to do their work. It must be remembered that distraction from noise was twice as great in the two independent study programs (see Table 3). Fewer students in the independent study programs indicated a need for visual privacy as compared to the students in the conventional program. For example, 38% of the students in the open space school with independent study and 40% of the

students in the conventional school with independent study indicated they lacked proper visual privacy as compared to 48% of the students in the conventional school with the conventional program. The students in the two independent study programs have considerably more personal choice as to where they could sit and also had a wider range of furniture to use including study carrels. However, the relatively high number of students in all three programs indicating a need for both acoustical and visual privacy raises some serious doubts as to how sensitive planners have been to the personal study needs of students.

While our high school study showed no distinct indications that open space provided either more or less privacy than conventional classrooms and the nature of the program was far more important, we did find that space was highly important in the elementary schools we studied. Over 50% of the students in the two open-space schools reported that they could find an adequate place to study by themselves, as compared to only 24% of the students in the conventional school. These results are reported in Table 5.

Table 5

ELEMENTARY STUDENTS REPORTING THEY HAVE
ADEQUATE SPACE FOR INDIVIDUAL STUDY ACTIVITIES

Individualized Program in Open Space	(N=83)	56%
Conventional Program in Open Space	(N=67)	50%
Conventional Program in Conventional Classrooms	(N=74)	24%

The standard size classroom provides students with far less opportunity to geographically separate themselves from their classmates; the lack of classroom boundaries in open space and additional common areas provide many more alternatives for choice of personal study space. The

data in Table 5 are particularly significant in that students in the conventional program in open space did not have as much personal freedom as those in the individualized program.

While these data from the studies cited above are far from conclusive, we are analyzing additional data that indicate such factors as density are far more important than space in considering noise, distraction, and privacy. If these factors are held constant it would appear that open space provides more opportunity to control negative effects.

Observation

Through observation, student and teacher activities and grouping patterns can be studied to determine if various functional objectives such as increased student-student interaction, small group instruction, and less teacher directed activity have been attained. It appears that these types of activities can be maximized if a special individualized program is implemented in open space. For example, a study conducted by the Maryland State Department of Education of an open-space school with a special individualized math program and a conventional school with a standard math program showed a wide variance in grouping patterns. In the open school 41% of the activities were in groups of 1-15 as compared to 11% in the conventional school, while only 15% were large group (31-40) in the open school as compared to 52% in the conventional school.

To answer a more common question of whether teacher teams in open space using conventional curriculum materials can achieve greater variety in the instructional program as compared to teachers in self-contained classrooms, observations were recently conducted of 22 teams in several open schools and a similar sample of teachers in self-contained classrooms.¹ Preliminary analysis of the data shows that activities and groupings in math, reading and social studies are more variable and less conventional in nature in the open-space schools. More students in open

¹ Erika Salmon, Team Teaching and the "Active" Classroom: A Comparative Study of the Impact of Self-Contained Classroom and Open Space Team Teaching Schools on Classroom "Activity." Unpublished Ph.D Dissertation, Stanford University, 1971.

space were engaged in non-group oriented work, more self-directed activities, less waiting and listening, but at the same time were engaged in slightly more "traditional" reading and writing activities. Grouping patterns were less traditional in open space as fewer students were engaged in class-size groups. In social studies, 76% of the time in self-contained classrooms was spent in large class groups as compared to 48% in the open-space schools.

Table 6
AVERAGE PERCENT OF STUDENTS IN VARIOUS
ACTIVITY AND GROUPING PATTERNS
IN OPEN-SPACE AND SELF-CONTAINED CLASSROOMS
(Non-Individualized Social Studies)*

<u>Activities**</u>	<u>Self Contained</u>	<u>Open Space</u>
Reading, writing, discussion	33%	39%
Waiting, listening	43%	28%
Self-direction	15%	22%
Free play, social activity	8%	9%
<u>Grouping**</u>		
Individual	8%	15%
Small group	15%	36%
Large group	76%	49%

*Social Studies programs were chosen that did not deliberately use individualized curriculum materials or special programs that would be considered "unconventional."

**Percentages do not add to 100% due to rounding to whole numbers.

Teachers in open space worked more closely with individual students on a one-to-one basis and with small groups. Teachers in the self-contained classrooms directed group activities to a great extent. The students in self-contained classrooms spent 43% of their time in social studies waiting or listening to the teacher talk as compared to 28% of

the students in open space. Teams of three and four teachers were far more successful in bringing about the changes described above. Teams of two and five or more looked much like single teachers in classrooms, but were still less conventional. The results are summarized in Table 6.

School Organization

The effects of team or cooperative structure in open space on some aspects of teacher performance cannot be overstated. It is true that problems in interpersonal relations that hinder effective team development is probably the most important problem that occurs in open space. At the same time, however, as seen above, teams can be more effective in bringing about greater student involvement and less group oriented work than teachers in self-contained classrooms. In other studies of open-space schools and conventional schools we found that team structure and open space bring about greater interaction about teaching tasks, curriculum development and student problems. Teachers in open space provide each other with a great amount of advice and feedback about their teaching and have even developed collegial evaluation processes (Table 7).

Although the loss of individual autonomy can be a problem in teaching teams, we found that when we asked teachers how much control they had over their own task performance (autonomy), teachers in open space reported a higher degree of self-control! Further analysis of the data showed that autonomy was higher in teams because of the support team members provide in times of crisis. The teacher in the self-contained classroom is often isolated from receiving help when she needs it.

Teachers in open-space schools also expressed considerably more satisfaction with teaching than teachers in self-contained classrooms. Forty-six percent of teachers in nine open space schools were highly satisfied with teaching as compared to 28% of teachers in a random sample of conventional schools. Again, team membership was the most powerful determinant factor.

Table 7

TEACHERS IN OPEN-SPACE AND
SELF-CONTAINED CLASSROOMS
(An Organizational Analysis)*

	<u>Open Space</u> (N=110)	<u>Self-Contained</u> (N=120)
High interaction with colleagues on teaching	76%	48%
High informal evaluation among colleagues	61%	32%
High self-control of work (autonomy)	86%	70%
High job satisfaction	46%	23%

*Adapted from J. Meyer, E. Cohn, F. Brunetti, S. Molnar and E. Salmon, The Impact of the Open Space School Upon Teacher Influence and Autonomy, Technical Report, Stanford Center for Research and Development in Teaching, November 1970. Preliminary Draft.